

Materials Characterization for Space Manufactured Components, Phase I

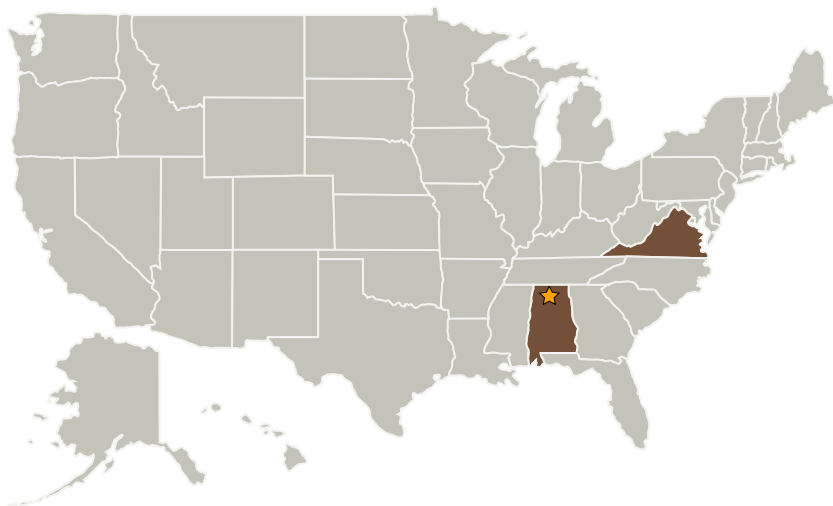
Completed Technology Project (2007 - 2008)



Project Introduction

Long duration missions to the Moon and Mars will place new demands upon components and systems leading to increasingly stringent requirements for safety, quality, maintainability and repair. In-Situ Fabrication and Repair (ISFR) of components is a key exploration initiative technology element managed by NASA's Marshall Space Flight Center. In this Phase 1 STTR project, Luna Innovations Incorporated (Luna) and the University of Alabama in Huntsville (UAH) propose to extend technology development of a high-resolution acoustic spectrometer to materials characterization for components manufactured in space. Luna and UAH will demonstrate the utility of ultrasonic phase-sensitive measurements with a laboratory Nondestructive Checkout Center (NCC) using Luna's PHLITETM technology to characterize the engineering performance of space manufactured components and to complement traditional NDE methods. The high resolution measurements have been shown in previous NCC development work to be direct indicators of stress, strain, structural stiffness and other material properties critical to aerospace applications. The current project seeks to extend the application of the technique to materials systems and manufacturing processes currently identified in the ISFR program element.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Luna Innovations, Inc.	Supporting Organization	Industry	Roanoke, Virginia

Primary U.S. Work Locations

Alabama	Virginia
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Mark McKenna

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - └ TX15.1 Aerosciences
 - └ TX15.1.3 Aeroelasticity